

AMENDMENTS TO THE CLAIMS

1. **(Currently amended)** A polymethylaluminoxane ~~preparation composition~~ generated by thermal decomposition of an alkylaluminum compound having an aluminum-oxygen-carbon bond, the alkylaluminum compound being generated by a reaction between trimethylaluminum and an oxygen-containing organic compound, wherein:

(i) the oxygen-containing organic compound reacting with trimethylaluminum is an aliphatic or aromatic carboxylic acid represented by the general formula (I),



[[~~(I)~~]] wherein R^1 represents a hydrocarbon group of C1-C20 straight or branched alkyl groups, alkenyl groups or aryl groups, and n represents an integer of 1 to 5[[~~(I)~~]]; and

(ii) a mole fraction of methyl groups originating from trimethylaluminum, relative to the total moles of methyl groups existing in the generated polymethylaluminoxane ~~preparation composition~~, is not more than 26 mol%; and

(iii) the generated polymethylaluminoxane ~~preparation composition~~ has a viscosity of not more than 2.1×10^{-3} Pa·sec at 40°C, and

(iv) an aluminum concentration of the generated polymethylaluminoxane composition is in a range of from 9.1 wt% to 9.4 wt%.

2. **(Currently amended)** The polymethylaluminoxane ~~preparation composition~~ according to claim 1, wherein

the oxygen-containing organic compound represented by the general formula (I) is benzoic acid.

3. **(Currently amended)** The polymethylaluminoxane ~~preparation composition~~ according to claim 1, wherein

the oxygen-containing organic compound represented by the general formula (I) is toluic acid.

4. **(Withdrawn-Currently amended)** A method of producing a polymethylaluminoxane ~~preparation-composition~~ having a mole fraction of methyl groups originating from trimethylaluminum, relative to the total moles of methyl groups of not more than 26 mol% and a viscosity of not more than 2.1×10^{-3} Pa•sec at 40°C, the method comprising the steps of:

causing trimethylaluminum to react with an oxygen-containing organic compound represented by the general formula (I),



[[~~(I)~~]]wherein R^1 represents a hydrocarbon group of C1-C20 straight or branched alkyl groups, alkenyl groups or aryl groups, and n represents an integer of 1 to ~~55~~,~~[[~~(I)~~]]~~ to form an alkylaluminum compound having an aluminum-oxygen-carbon bond; and

thermally decomposing the alkylaluminum compound,

wherein a ratio between a mole number of trimethylaluminum and a mole number of oxygen in the oxygen-containing compound represented by the general formula (I) is in the range of 1.25 to 1.40 : 1.

5. **(Withdrawn-Currently amended)** The method of producing a polymethylaluminoxane ~~preparation-composition~~ according to claim 4, wherein the thermal decomposition is conducted in the absence of a Lewis acid compound in production of the polymethylaluminoxane ~~preparation-composition~~.

6. **(Withdrawn-Currently amended)** The method of producing a polymethylaluminoxane ~~preparation-composition~~ according to claim 4, wherein the oxygen-containing organic compound represented by the general formula (I) is benzoic acid.

7. **(Withdrawn-Currently amended)** The method of producing a polymethylaluminoxane ~~preparation-composition~~ according to claim 4, wherein the oxygen-containing organic compound represented by the general formula (I) is toluic acid.

8. **(Withdrawn-Currently amended)** A polymerization catalyst for olefins, comprising as catalytic components:

a transition metal compound represented by the general formula (II),



[[()]]wherein M represents a transition metal element, and R^5 , R^6 , R^7 , and R^8 represent organic groups that form together a cycloalkadienyl backbone, such as an alkyl group, an alkoxy group, an aryloxy group, an alkylsilyl group, an alkylamide group, an alkylimide group, an alkylamino group, an alkylimino group, or a halogen atom[[()]]; and

the polymethylaluminoxane ~~preparation-composition~~ according to claim 1.

9. **(Original)** A method of polymerizing olefins using the polymerization catalyst according to claim 8.

10. **(Withdrawn-Currently amended)** The method of producing a polymethylaluminoxane ~~preparation-composition~~ according to claim 5, wherein

the oxygen-containing organic compound represented by the general formula (I) is benzoic acid.

11. **(Withdrawn-Currently amended)** The method of producing a polymethylaluminoxane ~~preparation-composition~~ according to claim 5, wherein the oxygen-containing organic compound represented by the general formula (I) is toluic acid.

12. **(Withdrawn-Currently amended)** A polymerization catalyst for olefins, comprising as catalytic components:

a transition metal compound represented by the general formula (II),



[[()]]wherein M represents a transition metal element, and R^5 , R^6 , R^7 , and R^8 represent organic groups that form together a cycloalkadienyl backbone, such as an alkyl group, an alkoxy group,

an aryloxy group, an alkylsilyl group, an alkylamide group, an alkylimide group, an alkylamino group, an alkylimino group, or a halogen atom[[]]); and

the polymethylaluminoxane ~~preparation~~ composition according to claim 2.

13. **(Withdrawn-Currently amended)** A polymerization catalyst for olefins, comprising as catalytic components:

a transition metal compound represented by the general formula (II),



[[[]]]wherein M represents a transition metal element, and R^5 , R^6 , R^7 , and R^8 represent organic groups that form together a cycloalkadienyl backbone, such as an alkyl group, an alkoxy group, an aryloxy group, an alkylsilyl group, an alkylamide group, an alkylimide group, an alkylamino group, an alkylimino group, or a halogen atom[[]]); and

the polymethylaluminoxane ~~preparation~~ composition according to claim 3.

14. **(Withdrawn)** A method of polymerizing olefins using the polymerization catalyst according to claim 12.

15. **(Withdrawn)** A method of polymerizing olefins using the polymerization catalyst according to claim 13.